

Appl. No. 10/714,368
Reply to Office action of 04/18/2005

REMARKS

Reconsideration of the above-referenced application in view of the above amendment, and of the following remarks, is respectfully requested.

Claims 1-11 and 21-24 are pending in this case. Claims 1 and 10 are amended herein and claims 12-20 are cancelled herein. Claims 21-24 are added here to more completely cover that which Applicant regards as the invention.

The Examiner rejected claims 1, 3, 4 under 35 U.S.C. 102(b) as being anticipated by Chang et al. (U.S. Patent 5,554,562) or Gardner et al. (U.S. Patent 6,362,510) or under 35 U.S.C. 102(e) as being anticipated by Hsu (U.S. Patent 6,613,626).

Applicant respectfully submits that claim 1 is unanticipated by Chang et al as there is no disclosure or suggestion in the reference of an active region comprising an epitaxially-grown substrate material between the first and second isolation regions, the epitaxially-grown substrate material having a tailored dopant profile through-out a depth of the epitaxially-grown substrate material. Chang teaches etching an oxide layer and growing epitaxial regions. Chang further teaches either doping the substrate prior to growing the epitaxial regions (paragraph bridging Cols 2-3) or after forming a polishing the epitaxial layer (Col. 3, lines 25-27). Col. 3 lines 9-13 of Chang discusses the diffusion of previously implanted dopants during the growth process. Chang does not disclose or suggest a tailored dopant profile throughout a depth of the epitaxial material as required by the claim. Accordingly, Applicant respectfully submits that claim 1 and the claims dependent thereon are unanticipated by Chang et al.

Applicant respectfully submits that claim 1 is unanticipated by Gardner as there is no disclosure or suggestion in the reference of an active region comprising an epitaxially-grown substrate material between the first and second isolation regions, the

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epitaxially-grown substrate material having a tailored dopant profile through-out a depth of the epitaxially-grown substrate material. Gardner teaches etching an oxide layer and growing epitaxial regions. Gardner further teaches adding a dopant gas during the epitaxial growth process (last paragraph Col. 9). However, Gardner does not disclose or suggest a tailored dopant profile throughout a depth of the epitaxial material as required by the claim. Accordingly, Applicant respectfully submits that claim 1 and the claims dependent thereon are unanticipated by Gardner.

Applicant respectfully submits that claim 1 is unanticipated by Hsu as there is no disclosure or suggestion in the reference of an active region comprising an epitaxially-grown substrate material between the first and second isolation regions, the epitaxially-grown substrate material having a tailored dopant profile through-out a depth of the epitaxially-grown substrate material. Hsu teaches forming a CMOS transistor having a mid-band-gap metal gate in which an undoped epitaxial silicon layer is formed over the active regions. Dopants diffuse from the underlying active areas into the epitaxial layer. Hsu does not disclose or suggest a tailored dopant profile throughout a depth of the epitaxial material as required by the claim. Accordingly, Applicant respectfully submits that claim 1 and the claims dependent thereon are unanticipated by Hsu.

The Examiner rejected claims 2, 6, 10 under 35 U.S.C. 102(e) as being anticipated by Hsu.

Applicant respectfully submits that claims 2 and 6 are unanticipated by Hsu for the same reasons discussed above relative to claim 1 from which claims 2 and 6 depend.

Applicant respectfully submits that amended claim 10 is similarly unanticipated by Hsu.

The Examiner rejected claim 5 under 35 U.S.C. 102(b) as being anticipated by Gardner et al.

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Applicant respectfully submits that claim 5 is unanticipated by Gardner for the same reasons discussed above relative to claim 1, from which claim 5 depends.

The Examiner rejected claims 7, 8, 9 under 35 U.S.C. § 103(a) as being unpatentable over Gardner et al. (U.S. Patent 6,362,510) in view of Natzle et al. (U.S. Patent 6,774,000).

Applicant respectfully submits that claims 7, 8, and 9 are patentable over Gardner in view of Natzle for the same reasons discussed above relative to claim 1 from which these claims depend. Natzle is merely added to teach raised source/drains.

The Examiner rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Gardner et al. (U.S. Patent 6,362,510) in view of Yu (U.S. Patent 6,399,450).

Applicant respectfully submits that claim 11 is patentable over Gardner in view of Yu as there is no disclosure or suggestion in the references of a tailored dopant profile throughout a depth of the epitaxially-grown substrate material. While Gardner teaches that a dopant source gas may be added during the epitaxial growth process, Gardner does not disclose or suggest tailoring the dopant profile through a depth of the epitaxially grown material. Yu is added to teach a raised source/drain and gate. Accordingly, Applicant respectfully submits that claim 11 is patentable over the references.

Applicant respectfully submits that newly added claim 21 is patentable over the references as there is no disclosure or suggestion in the references of a second active region comprising a second epitaxially-grown substrate material, different from the first epitaxially-grown substrate material.

Applicant respectfully submits that newly added claim 22 is patentable over the references as there is no disclosure or suggestion in the references of an epitaxially-

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grown substrate material comprising a different chemical composition from the substrate.

Applicant respectfully submits that newly added claim 23 is patentable over the references as there is no disclosure or suggestion in the references of the epitaxially-grown substrate material comprising a germanium dopant to affect the strain of the epitaxially-grown substrate material.

Applicant respectfully submits that newly added claim 24 is patentable over the references as there is no disclosure or suggestion in the references of an active region comprising the epitaxially-grown substrate material, wherein the epitaxially-grown substrate material comprises a germanium dopant to affect the strain of the epitaxially-grown substrate material.

The other reference cited by the Examiner has been reviewed, but is not felt to come within the scope of the claims as amended.

In light of the above, Applicant respectfully requests withdrawal of the Examiner's rejections and allowance of claims 1-11 and 21-24. If the Examiner has any questions or other correspondence regarding this application, Applicant requests that the Examiner contact Applicant's attorney at the below listed telephone number and address.

Respectfully submitted,



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